Applicants' Summary of Teachings of Kimoto

<First Example> Figs. 1, 2

1) A width (41, 43, 45, 47) for each LED element is obtained by slicing a light intensity distribution curve thereof at a sensitivity (a threshold Lth) of a photosensitive drum.
2) A memory circuit (38) memorizes a corrected driving current for driving the LED element so that the width will be equal to a target value. Thus, uniform dot sizes are formed on the photosensitive drum.

<Second Example> Figs. 3, 4

1) A three-dimensional light intensity curve is measured for each LED element.
2) An area (S) for each LED element is obtained by slicing the three-dimensional light intensity distribution curve at a sensitivity (a threshold Lth) of a photosensitive drum.
3) A memory circuit (38) memorizes a corrected driving current for driving the LED element so that the area (S) will be equal to a target value. Thus, uniform dot areas are formed on the photosensitive drum.

<Third Example> Figs. 6-8

1) Light intensity curves are measured for each LED element by using two slits arranged side by side with one ends distanced wider than other ends.
2) Two widths a and b for each LED element are obtained by slicing the two light intensity distribution curves each measured by each of the slits at a sensitivity (a threshold Lth) of a photosensitive drum.

3) A memory circuit (38) memorizes a corrected driving current for driving the LED element so that an area (a x b) will be equal to a target value. Thus, uniform dot areas are formed on the photosensitive drum.

Applicants' Summary of Teachings of Suzuki

<First Example> Figs. 7, 8

1) An exposure intensity curve and a peak value thereof are measured for each LED element.

2) An average peak value (IpO) is calculated from the peak values of all the LED elements.

3) A threshold value (TO)(e.g. 10 % of the average peak value IpO) is determined for deciding a beam spot area.

4) The beam spot area (S) {S(i) in Fig. 8} for each LED element is calculated at the threshold value.

5) An average beam spot area (SO) is calculated from the beam spot areas of all the LED elements.

6) If the average beam spot area (SO) is larger than a predetermined value (St), then, an LED array is rejected as defective. Otherwise, the LED array is judged to be usable.

<Second Example> Fig. 9

1) A group of LED elements '(e.g. number of pixels X = 32) in a main scanning direction is selected as a group forming a dither matrix. There are k groups as a total.

2) Each beam spot area is measured for each LED element and a group average beam spot area S_ave(k) is calculated for each group.

3) An overall average beam spot area SO is calculated for all groups.

4) A difference between each group average beam spot area S ave(k) and the overall average beam spot area SO is weighted against the overall average beam spot area SO so as to obtain a ratio of the difference { |S_ave(k) - SO |/SO1}.

5 If the ratio of the difference is larger than a predetermined value (C-bk), then, an LED array including the group is rejected as defective. Otherwise, the LED array is judged to be usable.

<Third Example> Figs. 11, 12

1) An exposure intensity curve and a peak value thereof are measured for each LED element.

2) An average peak value (Ip0) is calculated from the peak values of all the LED elements.

3) A threshold value (TO)(e.g. 10 % of the average peak value Ip0) is determined for deciding a beam spot diameter.

4) The beam spot diameter (Wx) {Wx(i) in Fig. 12} for each LED element is calculated at the threshold value.

5) An average beam spot diameter (WXO) is calculated from the beam spot areas of all the LED elements.

6) If the average beam spot diameter (WXO) is larger than a predetermined value (Wxt), then, an LED array is rejected as defective. Otherwise, the LED array is judged to be usable.

<Fourth Example> Figs. 12, 13

1) It is assumed that there are four sets of LED arrays for each color to form a color image by four basic colors.

2) An overall average beam spot diameter (WXO) for all LED elements of all the colors is obtained.

3) The following processes are repeated for each color.

a) A group of LED elements (e.g. number of pixels $X = 32$) in a main scanning direction is selected as a group forming a dither matrix. There are k groups as a total.

b) Each beam spot diameter is measured for each LED element and a group average beam spot diameter Wx_ave(k) is calculated for each group.

c) A ratio (A) of a maximum value of the group average beam spot diameters Wx_ave(k) to the overall average beam spot diameter Wx0 is calculated. Also, a ratio (B) of a minimum value of the group average beam spot diameters Wx_ave(k) to the overall average beam spot diameter Wx0 is calculated.

d) If a value (the ratio A - 1) or (the ratio B - 1), whichever is greater, is larger than a predetermined value C (arranged for each color), then, the greater value is compared with another predetermined value C which is bigger than the current C and prearranged for a different color. If, finally, the value is larger than any of all Cs, an LED array including the group is rejected as defective. Otherwise, if the value is smaller than any one of Cs (for a specific color), then, the LED array is judged to be usable for that specific color.